C. Remarks

The claims are 57-80, with claims 57 and 79 being independent. The independent claims have been amended to better define the presently claimed invention. Support for this amendment may be found, for example, in the originally filed specification at page 13, line 24, through page 14, line 6, in the drawings (e.g., Figs. 1D and 3B-1 to 3B-4) and in claims 60 and 61. Claims 58-65, 67-70, 74, 77, 78 and 80 have been amended to reflect the changes in claims 57 and 79. No new matter has been added. Reconsideration of the present claims is expressly requested.

Initially, Applicant and his attorney would like to thank the Examiner for courtesies extended during the interview conducted on September 16, 2005. During the interview, the proposed amendment to the claims and the cited documents were discussed. More details regarding specific subject matter discussed during the interview are provided below.

Claims 57-80 stand rejected under 35 U.S.C. § 112, second paragraph, as being allegedly indefinite.

Applicant respectfully submits that the above amendments obviate this rejection.

Claim 57-69 and 71-80 stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Patent Nos. 5,726,529 (Dean); 5,614,781 (Spindt); or 5,083,058 (Nonomura) in view of U.S. Patent No. 6,153,973 (Shibata). The grounds of rejection are respectfully traversed.

Prior to addressing the merits of rejection, Applicant would like to first point out some the key features and advantages of the presently claimed invention. That

invention, in pertinent part, is related to a method for manufacturing a spacer for use in an electron beam apparatus. In this method, a liquid material is applied onto the spacer substrate from a nozzle by a bubble generated using thermal energy, or by a piezoelectric element. The spacer has a first surface, which is flat, and a second surface. The first surface faces a substrate of the container and the second surface is a side surface to the first surface when the spacer is arranged in the container.

When a spacer has a flat bottom surface, it is difficult to form a desirable film that can cover both the bottom surface and its corner with a side surface by using highly directional liquid emission methods, such as, for example, by forming a bubble using thermal energy. To address this issue, the spacer in the present invention is treated so that there is substantially no acute angle in a cross-section at a corner part between the first and second surfaces. As a result, an excellent film is formed from the applied liquid material.

Dean is directed to spacers for field emission arrays. While Dean discloses, at column 7, lines 37-40, and in Fig. 10, a spacer with a circular sectional area, it fails to disclose a structure in which the plane facing the substrate of the container is flat, as in the presently claimed invention. Furthermore, Dean is not understood to disclose the application of a liquid material by forming a bubble using thermal energy, or by a piezoelectric element, as presently claimed. The Examiner has agreed during the above-mentioned interview that the shape of the spacer substrate and the coating application method as claimed are different from those disclosed in Dean.

Nonomura is directed to flat panel display devices. Nomura teaches round and rounded struts, which can be used in these devices. However, Nonomura does not disclose or suggest that the struts have a flat surface facing the substrate of the container or that the corner between the flat surface and the side surface is to be coated with a film material. Furthermore, Nomura lacks any disclosure regarding the presently claimed liquid deposition method. The Examiner, during the interview, agreed.[1] Clearly, Nonomura cannot affect the patentability of the presently claimed invention.

Spindt is directed to flat panel display devices. Spindt, in Fig. 7A, shows a spacer, which appears to have a flat bottom surface and rounded corners. No explanation regarding this shape or any reasons for using it are understood to be provided. In fact, this may appear to be nothing more than an arbitrary choice by a draftsperson.

Spindt discloses, at column 21, lines 22-25, and 47-51, that a metal oxide coating may be formed on the spacer using well-known techniques, such as thermal or plasma-enhanced chemical vapor deposition, sputtering, evaporation, screen printing, roll-on, spraying or dipping. As Applicant has pointed out during the interview, and the Examiner agreed, Spindt does not disclose or suggest an application of a liquid film material as presently claimed, i.e., by forming a bubble using thermal energy, or using a piezoelectric element, which is different-in-kind from the above-listed well-known techniques. However, in the Office Action, the Examiner alleged that Shibata discloses the presently claimed deposition method and it would have been obvious to use such a method

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1/ During the interview, the Examiner noted Fig. 1A in Nomura, which shows a prior art structure. Applicant would like to point out, however, that the strut 133 in Fig. 1A has a groove on its bottom surface, as shown in more detail in Fig. 1B. Therefore, clearly, the bottom surface of the strut in Fig. 1A is not flat as presently claimed.

in Spindt in lieu of the conventional methods mentioned above. Applicant respectfully disagrees.[2]

Shibata is related, in part, to a spacer provided in the contained in an electron-emitting device. This spacer does not have the cross-sectional configuration as presently claimed. Shibata teaches that in order to control the conductive properties of the spacer, an organic resin and a catalytic metal layer may be applied to the spacer. Specifically, as disclosed at column 10, lines 1-7, the catalytic metal layer may be formed by an ink-jet method as a band "substantially parallel to the plate", i.e., the catalytic metal layer does not cover a side surface of the spacer nor the corner between the side and the bottom surface. This is demonstrated by Fig. 5A in Shibata, where the catalytic metal layer 52 covers only the top and bottom surfaces.

Applicant respectfully submits that Spindt and Shibata cannot be combined to affect the patentability of the presently claimed invention. The Examiner will appreciate that art used in an obviousness rejection must suggest the desirability of the claimed invention. See M.P.E.P. § 2143.01. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art."

2/ As Applicant noted to the Examiner during the interview, Shibata is not prior art under 35 U.S.C. § 103(c), because Shibata was published after the filing date of the subject application and, like the subject application, is assigned to Canon Kabushiki Kaisha. However, since Shibata's corresponding application was published as EP 0 851 458 A1 before the filing date of the priority Japanese application in the present case, that European publication may be used as prior art. Therefore, Applicant will distinguish Shibata on the merits, but stresses that this discussion should not be interpreted as an admission that Shibata is prior art. At the Examiner's request, a copy of EP '458 is enclosed.

In re Kotzab, 55 U.S.P.Q.2d (BNA) 1313, 1317 (Fed. Cir. 2000) (emphasis added). "A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention." M.P.E.P. § 2143.01; see W.L. Gore & Associates, Inc. v. Garlock, Inc., 220 U.S.P.Q. (BNA) 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

As mentioned above, Spindt teaches applying a metal oxide to the spacer using conventional methods. However, since Shibata teaches, at column 8, lines 2-12, that it is not desirable to apply a metal oxide layer to the spacer due the difficulties with resistance control, as a matter of law, there is no motivation to use the deposition method of Shibata to apply the metal oxide in Spindt and disregard the teaching of the problems associated with the metal oxide. See id. Therefore, a combination of Spindt and Shibata would yield, at most, the application of the catalytic metal layer as taught in Shibata to the spacer in Spindt.

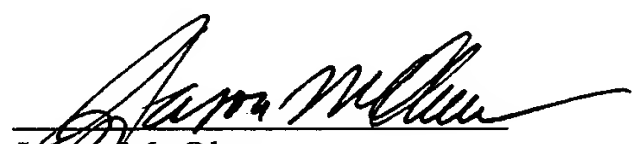
This combination clearly falls short of providing all of the presently claimed elements. Even if assumed, arguendo, that a person skilled in the part borrowed a deposition method and material from Shibata and used them in Spindt, this deposition still would be performed as in Shibata. Specifically, since Shibata teaches forming the catalytic metal layer substantially parallel to the plate, the material for this layer would not be applied to the corner portion between the bottom and side surfaces of Spindt's spacer, as presently claimed. The catalytic metal layer material would only be applied to the flat bottom and top surfaces of the spacer in Spindt. Thus, it is clear that the presently claimed

invention is patentable over Spindt and Shibata, even if these documents could be properly combined.

Wherefore, withdrawal of the outstanding rejection and passage of the present case to issue are respectfully requested.

Applicant's undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address given below.

Respectfully submitted,



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